General versus Regional Anesthesia Compared as Maternal and Fetal Outcome in Cases of Toxemia of Pregnancy

Thesis
Submitted in Partial Fulfillment of The Master Degree in **Anesthesia**

By
Mostafa Ahmed Ahmed El Maandy
M.B.B.Ch, (2012)
Tanta University

Supervisors:-

Prof./ Bassem Boulos Ghobrial

Professor of Anesthesiology
Faculty of Medicine - Ain Shams University

Assist. Prof./ Ahmed Ali El Shebiny

Assistant Professor of Anesthesiology
Faculty of Medicine - Ain Shams University

Dr/ Diaa Eldin Shalaby M AL Awady

Lecturer of Anesthesiology
Faculty of Medicine - Ain Shams University

Faculty of Medicine
Ain Shams University
2019

Acknowledgement

First of all, all gratitude is as a result of Allahalmighty for blessing this work, until it has reached its end, as a part of his generous help, throughout my life.

Really I can hardly find the words to express my gratitude to Prof.Dr. Bassem Boulos Ghobrial, Professor of Anesthesiology, Faculty of Medicine - Ain Shams University, for his supervision, continuous help, encouragement throughout this work and tremendous effort he has done in the meticulous revision of the whole work. It is a great honor to work under his guidance and supervision.

I would like also to express my sincere appreciation and gratitude to Assist. Prof.Dr. Ahmed Ali El Shebiny, Assistant Professor of Anesthesiology, Faculty of Medicine - Ain Shams University, for his continuous directions and support throughout the whole work.

I cannot forget the great help of Dr. Diaa Eldin Shalaby M AL Awady, Lecturer of Anesthesiology, Faculty of Medicine - Ain Shams University, for his invaluable efforts, tireless guidance and for his patience and support to get this work into light.

Words fail to express my love, respect and appreciation to my mother and my wifefor their unlimited help and support.

I also would like to thank all my leaders and colleagues in Ghamra Military Hospital for their faithful contribution and assistance.

Last but not least, I dedicate this work tomy family whom without their sincere emotional support, pushing me forward this

Mostafa Ahmed Ahmed El Maandy

List of Contents

List of abbreviations

ACTH	adrenocorticotrophic hormone	**G group**	general anesthesia group
ALT	alanine aminotransferase	**IUGR**	intra uterine growth restriction
AST	aspartate aminotransferase	**LSCS**	Lower Segment Caesarian Section
C.S	Caesarian Section	**MAC**	minimum alveolar concentration
C.V.P	central venous pressure	**MAP**	mean arterial blood pressure
CHF	Congenital heart failure	**MI**	Myocardial infarction
CI	cardiac index	**NIBP**	non invasive blood pressure
CSE	Combined spinal–epidural anesthesia	**P.E**	pre eclampsia
CTG	Cardiotocography	**PCA**	Patent Control Analgesia
DBP	Diastolic blood pressure	**PCWP**	pulmonary capillary wedge pressure
E group	epidural anesthesia group	**PET**	Pre-eclamptic toxemia
ESRD	end-stage renal disease	**S group**	spinal anesthesia group
FHR	fetal heart rate	**SBP**	Systolic blood pressure

List of Tables

List of Tables(Cont.)

List of Figures

List of Figures(Cont.)

Introduction

Pre-eclamptic toxemia (PET) is a multi-framework issue that is portrayed by endothelial cell brokenness as an outcome of anomalous hereditary and immunological components. Regardless of dynamic inquires about for a considerable length of time, the precise etiology of this conceivably deadly confusion stays obscure. Albeit comprehension of the pathophysiology of pre-eclampsia has increased, the executives has not changed genuinely throughout the years ***(Ravi et al., 2016).***

Anesthetic management for these patients remains a test. Albeit general anesthesia can be utilized securely in preeclampsia ladies, it is related with more prominent fetomaternal dreariness and mortality. These days, territorial anesthesia methods are more secure alternative and they can give better obstetrical result when chosen appropriately. Along these lines, local anesthesia is generally utilized for the obstetric administration in pre-eclamptic ladies . For as long as 50 years pre-eclampsia has been one of the two commonest gruff reasons for pregnancy related demise, being second just to pneumonic embolism in ongoing UK maternal mortality information, and comparative certainties in America and Australia. For a long time most PET passings were from cerebral drain, however since the mid-1980s pneumonic edema (iatrogenic liquid over-burden and Adult Respiratory Distress Syndrome) has turned into the gourmet specialist reason for death ***(Ravi et al., 2016).***

The overall dangers of general and territorial anesthesia must be evaluated when Cesarean segment is

required. Local anesthesia is normally viewed as more secure, in spite of the fact that cases must be evaluated on an individual premise. **(*Sivevski et al., 2015).***

Pulmonary aspiration, Failed esophageal intubation , sedate related fetal sadness are largely dangers of general anesthesia. Pulse changes among laryngoscopy, intubation and the danger of cerebral discharge might be more noteworthy in preeclamptic ladies than sound patients and ordinary parturient **(*Moslemi et al., 2007).***

Going before information showed that spinal anesthesia was flawed in PET, the normal potential dangers of pneumonic edema, serious cardiovascular flimsiness, perhaps from slide in heart yield, and the resultant response to IV liquids and vasoconstrictors, recommended that it wasn't a system of decision in PET. Anyway among the most recent decade, after the entry of pencil point spinal needles and more up to date nearby sedative specialists, it has been attempted and given an ideal outcomes. In the majority of the obstetrical focuses it is currently being utilized as first decision anesthesia techniuqe for preeclamptic patients ***(Ravi et al., 2016).***

The two kinds of anesthesia are related and expanded danger of maternal horribleness and mortality, which is progressively common preoperatively in patients given general anesthesia when contrasted with local anesthesia. The greater part of these examinations prescribe further clinical preliminaries to pick the best method.

The information from past investigations shows that pre-eclampsia, eclampsia - related intricacies and discharge are the main sources for affirmation of obstetric patients to the ICU **(*Chawla et al., 2013).***

In our hospital we have been using the two the techniques of anesthesia, general as well as regional since years.

HELLP Syndrome is an abbreviation that represents hemolysis, elevated liver enzymes, and low platelet count. It is a hazardous confusion and thought to be a variation of pre-eclampsia and it for the most part happens among the third trimester (following 20 weeks incubation) or not long after labor. HELLP is likewise a multisystem ailment that outcomes in summed up vasospasm, small scale thrombi development and coagulation deserts. Given that HELLP Syndrome left untreated, it can prompt maternal end-organ disappointment just as fetal death. The event of HELLP Syndrome occurs in around 0.1%-0.8% all things considered. Andin that level of pregnancies, 10%-20% of ladies have serious preeclampsia or eclampsia **(*Snyder et al., 2015).***

HELLP Syndrome has been accounted for as high as 25%". Moreover, having a family ancestry, ladies over age 25, and being Caucasian are built up as hazard factors. Essentially, the group of three of abnormalities that establish HELLP puts the mother in danger for liver hematoma or burst and drain just as a rundown of different entanglements, for example, (DIC), placental abrubtion, intense renal disappointment and intense liver failure ***(Aloizos et al., 2013).***

Fetal complications include placental abruption, (IUGR), (IUFD) and premature delivery. The incidence of stillbirths and neonatal deaths in severe pre-eclamptic women was 22.2/1000 and 34.1/1000, respectively ***(Chattopadhyay et al., 2014).***

Aim of the Study

The aim of the work is to detect the ideal and safest type of anesthesia for the two mother and delivered fetus in pre-eclamptic patients undergoing C.S.

Primary outcome:

Evaluation of the effect of the regional and general anesthesia on the intra-operative hemodynamic status and need for intravenous fluid in patient and toxemia of pregnancy undergoing C.S.

Secondary outcome:

Evaluation of the effect of the regional and general anesthesia on bleeding tendency, liver affection and intraocular pressure.

Evaluation of the effect of the regional and general anesthesiaon post-operative maternal and fetal complications.

Pregnancy induced hypertension

Incidence and Definitions

Occurs in approximately 10% of pregnancies and it is a serious cause of maternal mortality. Pregnancy induced hypertension involves gestational hypertension, pre-eclampsia, and eclampsia (preeclampsia + seizures). Characterized by; Blood Pressure greater than 140/90 and proteinuria more than 0.3 g/day. A related condition is HELLP syndrome which is acronym for hemolysis, elevated liver enzymes and low platelet count. Death, provided that it occurs, is as a result of CHF, MI, coagulopathies, or cerebral hemorrhage. There is a bi-modal age distribution, and the disease occurring primarily in younger and older parturients.

All that is needed to diagnose preeclampsia is HTN and proteinuria. "Severe preeclampsia occurs if blood pressure more than 160/110, proteinuria more than 0.5 g/day, or there is evidence of end organ damage (oliguria, cerebral/visual disturbances, pulmonary edema, abdominal ache, IUGR, seizures, etc.)".

The definite disease mechanism is unknown, though it is thought to be caused by excessive production of placental thromboxane (in normal pregnancies, thromboxane : prostacyclin are 1:1, whereas in Preeclampsia the ratio is 7:1 Intense CNS vasoconstriction may be a common underlying pathophysiological deviation

in these patients, postmortem examinations have yielded areas of hemorrhagic necrosis.

Pregnancy Induced Hypertension:

Preeclampsia

- Blood Pressure greater than 140/90
- Proteinuria more than 0.3 g/day
- Edema
- Headache

Eclampsia

- With Seizures

HELLP syndrome

- Hemolysis
- Elevated liver enzymes
- Low platelet count

Causes of death in PIH

- CHF
- MI
- Coagulopathies
- Cerebral hemorrhage
- Seizures

Pre-eclampsia

Definition :

It's a disorder of pregnancy which characterized by an onset of high blood pressure and a meaningful amount of proteinurea. This condition begins after 2o weeks of gestation. Preeclampsia increases the risk of poor outcomes for the two the mother and the baby. Provided that it left untreated, it might results in seizures which then it is called eclampsia ***(Eiland et al., 2012).***

The blood pressure is characterized as high when it's greater than 140 mmHg systolic or 90 mmHg diastolic at two separate times, over four hours separated in a woman after twenty weeks of gestation ***(Roberts et al., 2013).***

It is a standout amongst the most well-known reasons for death because of pregnancy. It resulted in 46, 900 deaths in 2015***(Wang et al., 2016).***

Causes:

There is no complete known reason for pre-eclampsia, though it is likely related to a some factors. Some of these factors include:

- Abnormal placentation (formation and development of the placenta). Although the accurate cause of pre-eclampsia stays unclear, there is a solid proof that an abnormally implanted placenta is a major cause predisposing a susceptible woman to pre-eclampsia. This abnormally implanted placenta may results in poor uterine and placental perfusion, conceding a state of